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ABSTRACT

This review of the relationship between experiential education and intellectual development/academic learning is organized as follows: first, the theoretical arguments are presented, followed by a review of recent related research. It focuses primarily on experiential education for secondary students, though research on college-level programs is very briefly summarized. The theoretical case considers experiential education as a method of learning, as a guard against meaningless abstraction, as an extension of one's world, and as a stimulus for personal learning. Experiential learning may be viewed as a mode of learning, as a process, or as a style of learning. While the strength of the theoretical case for intellectual development through experiential education is substantial, empirical research to validate these claims is of a more modest scale. The empirical research does underscore two important points: (1) experience-based programs are series of program experiences shaped by individualistic motives; and (2) experiential education programs are often a hidden curriculum expressed largely through vague and imprecise goals. (BW)

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THE IMPACT OF EXPERIENCE ON ACADEMIC LEARNING: A SUMMARY OF THEORIES AND REVIEW OF RECENT RESEARCH

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The Impact of Experience on Academic Learning: A Summary of Theories and Review of Recent Research

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> Experience is never limited and it is never complete; it is an immense sensibility, a kind of huge spider's web of silken threads suspended in the chambers of consciousness and catching every airbourne particle in its tissue.
>
> Henry James

James' characterization of experience as too immense, complex, illusive, and mysterious to fully comprehend speaks to the difficulty of conducting empirical studies of the related phenomenon of "learning by experience" or as we shall refer to it in this review, "experiential learning."[1] While one can criticize all of the studies reported below for various methodological errors, their limitations seem more related to the complex "sensibility" they are trying to capture rather than to technical problems such as sampling error or inappropriate statistical analysis. It may well be that the familiar refrain about the lack of "hard" evidence on the impact of experiential learning on academic learning stems from the great difficulty in structuring manageable studies of this "spider's web."

Moreover, there has been far more interest in investigating how experiential learning affects the student's social and psychological development rather than academic achievement. This can be attributed to the fact that the majority of youth participation/experiential learning programs have been designed to provide adolescents with significant and responsible social roles and to enhance their personal development, not primarily to increase their academic knowledge. There is a fairly substantial

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[1] "Experiential education" is defined here as educational programs functioning outside of the conventional classroom in which adolescents are in new roles featuring significant tasks with real consequences, and in which the emphasis is on learning through doing with associated reflection. The tynpes of programs typically included in experiential education are service learning, adventure education, internships, cultural journalism, political and social action and community study research.

body of evidence to indicate that well-constructed experiential learning programs can stimulate moral and ego development (Mosher, 1977), enhance self-esteem (Westmore, 1972; Nye, 1976; Kelly and Baer, 1971; Conrad and Hedin, 1982;) increase interest in community involvement and social problems (Riecken, 1952; Hyman, et al, 1962; Wilson, 1974; Button, 1972; Conrad and Hedin, 1982; and Hamilton and Zeldin, 1983;) improve knowledge about careers and attitudes toward career planning (Bucknam, 1976: Watkins and Corder, 1977;) and increase social and personal responsibility (Conrad and Hedin, 1982).

The following review of the relationship between experiential education and intellectual development/academic learning will be organized as follows: first, the theoretical arguments will be presented, followed by a review of recent related research. This review focuses primarily on experiential education for secondary students, though research on college-level programs is very briefly summarized.

Theoretical Case for Experiential Education Contributing to Intellectual/Academic Development[2]

> In the experience I have of myself, I find enough to make me wise, if I were a good scholar.
>
> Montaigne, 1595/1958, p. 354

This statement by Michael de Montaigne suggests two central connections between experience and learning. The first phase, "in the experience I have. . ." suggests the need for breadth and depth of experience as a ground for learning. The last, "if I were a good scholar," emphasizes that learning from experience requires conscious attention to the skills involved in drawing wisdom from it.

Having Experience. One of John Dewey's major contributions was to demonstrate the necessary connection between learning and experience. When pressed for a technical definition of

[2]This part of the review draws heavily on one written by Dan Conrad (1980).

education, he offered: "It is that construction or reorganization of experience which adds to the meaning of experience, and which increases ability to direct the course of future experience" (Dewey, 1916/1966, p. 76). Simply stated, education is of, by, and for experience. With the caveat that experience has a richer meaning than "activity" of mere "occurrence," this definition suggests that the phrase "experiential education" may be essentially a tautology. Experience is a vital component of education in at least the following ways.

As a method of learning. A starting point is the Jamesian, Deweyan, Piagetian, Polanyan, et al. view that knowing requires that the individual interact with the environment. For some kinds of learning, such as learning to swim or ride a bicycle, the requirement is obvious. Here a non-experiential method of learning is difficult to even imagine. "Having done" is implied in the meaning of "having learned." A similar conection holds for more complex learnings. From Aristotle to the neo-Freudians doing is the preferred -- even exclusive -- means of acquiring character traits such as bravery, industry, steadfastness, and the like -- notions of "good citizenship" as a by-product of studying the westward movement notwithstanding. For any subject matter, in fact, one can meaningfully speak of an "experiential" approach to it.

James Coleman (1979), in discussing methods of teaching language, reading, and math, pointed out that for each "there are ways to learning. . . that are experiential learning, and there are ways that are not" (p. 8). A second language, for example, can be learned by memorizing its vocabulary and rules of grammar. The effective use of the language, however, can be more readily (though sometimes more painfully) acquired experientially, "by being in the linguistic environment, by trying and failing and finally succeeding, in making oneself understood and understanding others" (p. 7). For any subject area, the experiential approach provides "solid experience base, in one's own life, for the very symbolic modes that one subsequently uses to transmit information bypassing experience" (p. 8).

The need for experience is often most readily acknowledged when the consequences of learning (or not learning) are most

clear. Pre-occupational training is one example. The practice of requiring student teaching, trade apprenticeships, on-the-job training, medical internships and other professional residencies illustrate that classroom instruction as a method has limits, that for some learnings there is no reasonable substitute for practical experience.

As a guard against meaningless abstraction. John Dewey (1916/1966) admonished educators to make learning "active," and to tie instruction to the interests and to the experiences of the learner or fall victim to "the standing danger that the material of formal instruction will be merely the subject matter of the schools" (p. 8) and strike no ground of meaning in the life of the student. The function of a concept or generalization (or even a pithy saying) is to summarize the data of experience in a way that both effectively conveys and gives coherent (or even new) meaning to the information given. "But," as Olson and Bruner (1974) have pointed out, "there are limits in the degree to which such representations, whether in language or other symbolic systems, can substitute for or extend ordinary experiences. As a summary of experience, they are indeed powerful. . .to the extent that they summarize no experience, they convey little or no information" (p. 147). All too often, formal instruction piles abstraction upon abstraction as if "the remoteness of a given concept could be diminished by the elaboration of its equally remote antecedents and presuppositions" (Norton, 1973, p. 46). The result may not be knowledge, but only the appearance of knowledge. As Norton (1976) elsewhere observed, ". . .the great enemy of integrity is not falsehood but -- ironically -- the attractiveness of foreign truths, truths that belong to others" (p. 9). To Dewey, such second-hand learning is "dead and barren," and consists of "degenerate reminiscence of what someone else once formulated on the basis of the experience that some further person had, once upon a time, experienced" (Dewey, 1902/1964, p. 354).

As an extension of one's world. That some instruction can be labelled "degenerate reminiscence" may not so much reflect blind ineptitude in teachers as it does the narrow experience base of learners. An impoverished experience base results in

impoverished interests and questions, and modern adolescents too often display just such a privation. A form of experiential education deliberately geared to increasing the associational and experiential base of students is community study. In such programs, students encounter persons, events, settings, neighborhoods, issues that they might not otherwise experience. The need to deliberately promote such contacts, Coleman (1979) observed, "lies in the 'sanitizing' of a young person's environment which has resulted in part from the conscious attempts by parents to protect their children from bad experiences, and in part from the general movement of society toward institutionalization of the young in schools" (p. 9). He might have added that teachers themselves are institution-bound. Community study broadens their horizons as well, and exposes them and their students to information, experiences, and sources of learning not available in the usual school setting. By using the community as a classroom, the school promotes wider experience and adds resources for both teacher and student that would be the envy of the most heavily endowed academy.

The value of an extended experience base is not limited to increasing the quantity and quality of stored information. It provides the student with a broader range of situations (and with real dilemmas) in which to practice and develop survival and problem solving skills. In reviewing the research regarding children's problem solving skills, Brown and Deloache (1978) were struck by the apparent need for broader experience. They concluded:

> This accumulation of knowledge about how to think in an increasing array of problem situations is an outcome of experience with more and more complex problems. Young children's insensitivity to their problem-solving potential is the result of lack of exposure to such situations, rather than age per se. . .
>
> (pp. 30, 31)

As a stimulus for personal learning. In as strong a plea as Dewey (1902/1964) ever made for personal growth as an aim of education, he wrote:

> To the growth of the child all studies are subservient; they are instruments valued as they serve the needs of growth. Personality, character, is more than subject-matter. Not knowledge or information, but self realization,

> is the goal. To possess all the world of knowledge and lose one's own self is as awful a fate in education as in religion.
>
> (p. 343)

To regard personal growth as an aim of education is likely to sharpen one's discontent with the sterile environment of the classroom -- and the blandness -- of adolescent life outside the school. Returning to Coleman's (1979) article on the function of experiential education:

> It is intense experiences, critical events, that give us knowledge of ourselves, make us less fearful of our faults, more able to address them in a straightforward way, without fear of favor. This the school was never designed to do.
>
> (p. 8)

Moreover, Coleman argues that the sterile life in schools is now matched with a similar "vacuum outside the school." He suggests that more engaging and powerful experiences should be added to the adolescent's repertoire:

> It has come to be time to design learning environments, whether in school or in another setting, that contain those experiences that move one along the path to self knowledge.
>
> (p. 9)

Another meaning of personal knowledge is that of "making knowledge one's own" as suggested by Michael Polanyi (1962). Somewhat oversimplified, his notion is that all real knowledge is ultimately personal knowledge: it goes beyond the objective facts to a sensing of the cues, nuances, hints, interrelationships that give life and utility to facts, skills and concepts. In commenting on Polanyi's work, Hennessey (1970) noted:

> Such awareness, and such knowledge, come about, in part, through trial and error, and the almost instantaneous correction that man's perception and cognitive apparatus enables him to make. To understand, the human animal needs practice in the integration of cues and the projection of meaning.
>
> (p. 106)

In this sense, the value of a community placement, for example, is not just in straightforward application or in gaining new facts or skills but in gaining a "feel" for a setting or task, for sensing patterns and interactions, internalizing a

subculture, developing a personalized verstehen of a particular reality.

These four elements in the relationship between experience and education do not exhaust the possibilities. They serve, however, to illustrate how "the experiences I have of myself" are potential sources of learning or even wisdom. Whether or how this potential is realized depends on what one does with ones experiences.

Being a scholar of experience. To say that it is possible to learn from experience does not imply that learning automatically accrues from experience, the example of the man who has seen everything and learned nothing being all too familiar. Similarly, to assert that all learning must at some point and in some degree be tied to experience does not mean that the experiential method is the only means of acquiring useful knowledge. Experience may be miseducational as well as educational (Dewey, 1938; 1972). And the "experiential" approach is but one method of education. Effectiveness in employing the method may be furthered by an understanding of its nature.

a. As a mode of learning.

David Olson and Jerome Bruner (1974), in an insightful article, suggested that humans have available to them three different modes of learning. They can learn through contingent experience, through observation of models, and through symbolic systems. One of their major points is that while there are important variations within the modes, they "converge as to the knowledge they specify, but they diverge as to the skills they develop" (p. 132). There are common units of information about a legislative body, for example, that can be learned either through verbal and written symbols, through observation, or through direct experience. But there are even more important differences. The first is in the quantity and quality of incidental learnings (including attitudes) that will be gained concerning the object of knowledge (here, the legislature,, oneself, and the enterprise of learning itself. Secondly, and even more significantly, the skills used to extract the knowledge through each mode are radically different. Thus, an educator must be concerned not only with the knowledge s/he wishes to convey, but

with the "mental skills that are developed in the course of acquiring the knowledge" (p. 149). The basic skills for learning from experience include, at minimum, those of observation, active questioning, and synthesis (Conrad and Hedin, 1976). To teach a course "experientially" means more than to place students in active roles in the community; it also means to equip them with the skills to learn effectively in that setting.

b. As a process

James Coleman (1976) has attempted to delineate the process of learning from experience. His approach was to distinguish two distinct patterns or models of learning and instruction, "information assimilation" and "experiential learning." He acknowledged that "both processes have their virtues and faults, and neither is sufficient as the sole process for human learning" (p. 50). Each involves somewhat different skills in the learner and each can be said to be more or less appropriate depending on what particular things are to be learned.

Classroom-bound instruction is usually conducted through the information assimilation model whereby knowlege or information is transmitted from an instructor to a learner. At its best, Cleman observed, the process occurs through a series of steps: the first step is "reception of information," followed by "understanding the general principle," then "particularizing" (i.e., applying the principle to a specific instance), and lastly, moving from the symbolic sphere to that of action through direct "application" of knowledge gained in the previous steps.

The experiential process, Coleman continued, proceeds in almost the reverse sequence: "acting" and seeing the effects of that action, "understanding the particular case" so that one could anticipate what would happen if the same circumstance occurred again, then "understanding the general principle" under which the above occurred, and finally, "application through action" in a new circumstance.

The two processes have their characteristic strengths and weaknesses. The information assimilation process is an efficient means of transmitting stores of information, and effective in providing general principles for organizing particular facts learned. The experiential process is weaker in just those areas,

but has the advantages of: providing "not only principles and facts but also sequences of actions and consequences;" (p. 54) insuring greater retention of what is learned; being less dependent on a learner's competence with symbolic media; and involving learners in the point of learning -- namely, its application to particular instances. It is largely because of the last feature, that learning be purposeful, that "motivation is seldom a problem with experiential learning, while teachers often see it as the major problem of learning in the classroom" (p. 57). Knowledge is used and not merely accumulated like bits of string in the vague hope it may come in handy someday.

c. As a style of learning.

Further insight into the relation between experiential and other learning modes is found in the literature on "learning styles." Kolb and Fry (1975) describe learning as a total experiential process which involves four basic steps, each of which represents a somewhat different "style" of learning. The four steps, which rather strikingly parallel Coleman's steps (above) are concrete experience, reflective observation, abstract conceptualization, and active experimentation. Ideally, learning occurs in the sequence listed and leads back again to the starting point of concrete experience. The total learning process is a cycle, and "really effective learning occurs when all four learning approaches come into play, with the mix depending on the requirements of the situation" (Gish, 1979, p. 5).

What is more common, however, "is that individuals develop preferences for one or two learning modes" (ibid., p. 4) which they use and develop more fully at the expense of the others. Similarly, instructional systems and settings favor (and thus develop) certain modes over others. For example, most school instruction, especially at the higher levels, is framed within the mode of abstract conceptualization. One function of an experience-based program, then, is to more fully engage students in all styles of learning.

While it is impossible to do justice to the complexity of the ideas of Olson/Bruner, Coleman, and Kolb in this general review, at least one major implication may be suggested.

Schools, especially secondary schools, give priority to teaching and learning through symbolic, abstract, assimilative systems. How successfully they do so is open to question. But even if some success is granted, the schools clearly have fallen short in helping students develop their active, experiential modes of learning. They may have learned to read a book and to comprehend a lecture and may have accumulated a storehouse of disparate facts, but how practiced are they in applying this knowledge, how capable of reading and comprehending their own experiences -- the skills and processes they will be called on to use most often in their adult lives? Thus, to urge more active participation is not just to make a plea for more satisfying educational experiences, or even more broadly educated adults. It is to take a stand on the fundamental skills which students must have for thinking about and dealing with their world. Only through deliberate attention to these skills will students be able, with Montaigne, to find in their experiences enough to make them wise.

Research on Experiential Learning and Academic Learning

In the intellectual realm, as in the areas of social and personal development the question must be asked whether experiential programs produce the effects promised by the theoretical analysis. Unfortunately, the impact on intellectual development and academic learning has rarely been the subject of research into experience-based chool programs. This in itself may be significant, though it's not clear if this lack of attention suggests a lack of interest, doubt (or confidence) about the outcome, lack of adequate instrumentation, or some other factor(s). No one can doubt that the task of assessing the effectiveness of any learning method is difficult. To establish that one method is "best" or even "better" than some other(s) may be impossible -- perhaps even pointless. As Joyce and Weil (1972) observed:

> There have been serveral hundred studies comparing one general teaching method to another, and the overwhelming portion of these studies, whether curriculum are compared, specific methods for teaching specific subjects are contrasted, or different approaches to counseling are analyzed, show few if any differences between approaches.
>
> (p. 4)

For example, among traditional categories of instructional methodology, those labeled "discovery" or "inductive" learning are most similar in proces to experiential learning as described in this study. Yet, despite enthusiastic support from theorists and practitioners, comprehensive reviews have been unable to establish the superiority of these approaches over straight expository instruction -- or, of course, vice-versa (Shulman and Karslar, 1966; Weiner, 1974). Accordingly, the studies summarized below do not establish the unquestioned superiority of experiential learning, but illustrate the direction and trends suggested by previous research.

Micro studies. Most efforts to investigate the effectiveness of "learning by doing" have been very circumscribed studies focussing on the learning of highly specific concepts or skills. In them, the experiential process is defined as behaviors such as "manipulating physical materials, solving problems, answering questions, and following laboratory procedures' (Lewis, 1976, p. 3). The object of instruction ordinarily consists of the short-run mastery of narrow concepts like buoyancy or binomial probability, or learning discrete skills like how to find the sum of any number sequence. Lewis, for example, tested the degree to which college students could learn both declarative and procedural knowlege about the concepts of shaping and stimulus discrimination through three modes: doing, observing, and reading. Among his findings were that through doing, students learned both declarative and procedural knowledge, and in rich detail. Through observation and reading they mastered only declarative knowledge and in that they were limited to what was sepcifically presented to them.

In quite a different study, Asher, Kusudo and de la Torre (1974) examined different methods of teaching Spanish to undergraduates. A group that learned "experientially" (i.e., executed motor commands, performed skits, acted in problem solving situations) was compared, after forty-five hours of instruction, with a group of high school students who had a year of instruction and with two groups of college students who were finishing their first and second semesters respectively. These three groups all received traditional textbook forms of instruc-

tion. The experiential group outperformed the other three groups with respect to listening comprehension and was equivalent to the first semester college students in reading skill. A high rate of transfer from listening to other language skills was observed and these skills were learned in one-half the time that was usually required in traditional textbook-oriented programs.

These studies illustrate a common form of "experiential" research. They offer (but of course don't prove) some evidence for the claim that persons not only can learn by doing, but that what is learned goes beyond mere recall of concepts and skills to gaining a greater "feel" for, and ability to apply, them in practice.

Tutoring Studies. The form of experiential education most extensively researched is that of cross-age tutoring. The most strongly supported findings are 1) tutors make significant gains in the subject matters they teach, and 2) the programs have positive effects on the academic performance and attitudes of those who receive tutoring. Three extensive reviews of tutoring research found this to be generally true in the hundreds of studies that investigated the issue (Allen, Feldman and Devin-Sheehan, 1976, Paolitto, 1976, Cohen, Kulek and Kulek, 1982). The subject areas commonly investigated have been math and reading with the reported gains often being quite substantial. For example, adolescent tutors in the New York Homework Helpers Program achieved a median gain of 3.4 years in reading scores in one year of tutoring (Neckritz, 1972). Whether such improvement carries over to other subject areas is more ambiguous. The Mobilization for Youth Study (Cloward, 1967) found no gain in overall school achievement, but a study of tenth and eleventh grade boys wtih discipline problems showed an overall increase in grade point average after serving as tutors for a term (Haggerty, 1971). Student tutors also tended to develop more positive attitudes toward the subject matter in which they were teaching. The results of studies of the effect of tutoring programs on self-concepts of tutors is mixed. In Cohen, Kulek and Kulek's (1982) meta-analysis, they found that in 12 of the 16 studies, tutors showed higher self-concept than those who did not serve as tutors, though the average effect on self-concept was small.

The gains for those receiving tutoring from peers or older students tend to be smaller. Tutoring raised the performance of students by approximately two-fifths of a standard deviation in a typical class. Although the effects were modest in the typical study, the size of the effect varied form study to study with very large gains (2 to 3 standard deviation units) in some (Cohen, et al, 1982).

Other Studies. Indications of the potential impact of experiential programs on academic learning can be gleaned from a sampling of other studies. One fairly common approach, especially in vocational career-oriented programs, has been to forego trying to demonstrate a positive effect on academic learning in favor of merely showing that students were not harmed by the experience. This has been the method -- and the finding in evaluations of Experience-Based Career Education programs. Consistently they show no decline (and no gain) in basic skills (Bucknam, 1976). A comparable aim may be inferred from the rather cautious title -- "Experiential Education and Retention of Competencies" -- of a study by the National Center for Research in Vocational Education (Miguel, 1979). The implication of such studies is that the time spent away from traditional academic studies results in no loss of academic skills while, at the same time, it brings benefits which are unique to the experiential approach. Often, however, these other benefits (such as learning about careers) are either not well-documented or, if they are, they are classed as something other than academic, or basic, or intellectual.

The Eight Year Study conducted by Ralph Tyler and others (Aikin, 1942) asked a very significant question in terms of academic learning and intellectual development: Did students in experimental secondary schools where there was a variety of experiential learning activities, succeed in college? This question, which has not been systematically examined since the 1930's, may be the single most important one in the minds of parents, students, and educators about the risks and/or advantages of experiential education. The results were encouraging, students in the experimental schools did as well or better at college in grades, participation, critical thinking,

aesthetic judgement, and knowledge of contemporary affairs. Moreover, the students who came from the most extremely experimental schools (which had the most extensive opportunities for learning and peer teaching in the community) were found to be the most successful (Jennings and Nathan, 1978).

Some studies have, however, attempted to demonstrate gains in academic learning. An example is a series of programs geared at deliberately promoting psychological development in adolescents. These studies consistently showed that in addition to growing in psychological maturity, the students gained significant content knowledge in the area of program focus. They became skillful in conducting and participating in democratic groups, and learned to "counsel or teach as well as many professionals" (Sprinthall and Mosher 1976, p. 45). It would seem that only a peculiarly narrow definition of "academic" or "intellectual" would exclude these as being significant learnings.

Several studies concerned with the impact of experience on academic learning have investigated the issue primarily through self reports of participants. It was such reports that led Hennessey (1970) to observe that "political internships are intellectually, professionally, and personally rewarding," and to conclude that "one does not need to spend much time with political interns to become convinced that internships are a remarkably effective learning experience" (pp. 102-103). Similarly, a series of studies of college students involved in volunteer service interships revealed that nearly all of the participants felt they had gained significantly in both knowledge and skills related to their placement (Kiel, 1973). A nationwide survey of some 4,000 high school students involved in experiential programs reported that over 75% of the students felt they had learned more or much more in their experiential program than in their regular classes (Conrad and Hedin, 1978).

The kinds of academic and intellectual learning attested to by the students in these self-reports is of special interest. While reference was sometimes made to specific facts and concepts, the strongest responses centered on skills, process, complexity, awareness, and general understanding. Such reports

are consistent with the theoretical argument that experience takes the learner beyond mere information, to what Weber called verstehen, i.e., a keener "feel" for the facts, deeper and more personal understanding, a heightened sense of meaning, and greater ability to use intellectual content and processes.

In a recent study by Agnew (1982) of a program designed for students to apply their academic skills and knowledge in community service, he found that those in the experiential program outperformed their classmates on tests of subject matter in biology, mathematics and social studies. For example, in a nutrition unit in a 10th grade biology course, half of the students worked in a food co-op and provided information to low income persons on nutrition. The control group learned about nutrition in the biology classroom. In a test of nutrition content, the students who volunteered in the food co-op scored significantly higher.

In the Experiential Education Evaluation Project, a national study of 27 experiential programs in secondary schools, intellectual development was measured through a problem-solving instrument (Conrad and Hedin, 1982). The rationale was that analyzing and solving problems was a critical intellectual faculty, transferrable to a wide variety of human challenges, and thus worthy of careful, systematical evaluation. The Problem Solving Inventory presents students with interpersonal problems and leads them through the steps in problem solving as delineated by Dewey. The instrument assesses the level of empathy and complexity of thought shown in the overall analysis of the problem.

Students in experiential programs showed greater increases in empathy and cognitive complexity than did the comparison groups. The gains were largest in the programs where students were directly confronted with interpersonal problems similar to those in the stimulus story and where problem solving was a deliberate focus of accompanying seminar sessions. The same finding occurred in a summer program, where 16- and 17-year olds served as peer leaders for middle school children in an inner city in the Midwest. The peer leaders scored significantly higher over a period of 8 weeks on those items in the Problem

Solving Inventory that most closely resembled the kinds of settings and problems they encountered in their day-to-day work with children. It appears that problem-solving ability is enhanced when there is opportunity to practice these skills in relation to problems similar to those in the test. This might be thought of as "teaching to the test" or instead illustrates that lack of generalizability in problem-solving from one setting to another.

Several studies have demonstrated that internships can enhance knowledge about government and public affairs. Harrison (1977) found that students who participated in programs of the Institute of Political and Legal Education (such as conducting research for legislators, lobbying for bills, conducting voter registration drives) gained more knowledge about government and political awareness than those in a control group in a conventional civics course. Hamilton and Zeldin (1983) found that local government internship programs were effective in teaching factual knowledge about local government. In this very well designed study, they compared the internship program to classroom approaches to the study of local government and compared the interns to a delayed treatment group of prospective interns. They also investigated the characteristics of the four intern programs to determine which specific components might account for its impact. Overall the interns gained more knowledge about local government, had higher levels of political efficacy, and talked more about local government than did the classroom group or the delayed treatment group. They did find significant variation among the internship programs and concluded that a seminar to process what students were observing in legislative meetings and opportunities to take a more active role with their governmental mentors was associated with greater satisfaction, greater learning and more favorable attitudes. At the college level, a series has been conducted to assess whether learning concepts and knowledge about psychology, sociology, anthropology, etc., can be enhanced through field experiences. The results are inconclusive. In a study by Ingle and Zaret (1968) of a course in educational psychology, they found that tutoring, an active form of field participation, was no more

effective in improving knowledge about children than was passive observation alone. Hedberg (1979) found that pre-service teachers who did fieldwork learned educational psychology concepts as well as control subjects, despite receiving less classroom instructions. In this study, the conclusion was that time required for field experiences did not detract from students' learning of conceptual knowledge, but did not seem to be more effective than classroom learning. Ross, Hughes and Hill (1981) investigated whether field experiences could be structured to enhance learning of concepts in educational psychology. They found that students who participated in a 12-hour field experience in a public school showed a clear superiority on achievement tests of knowledge and ability to recognize new applications. In a study by Sherman (1981) of a fieldwork course in psychology, he found that students reported strong academic impact on problem solving, learning different methods of inquiry, and developing specific skills needed by psychologists.

One possible explanation for the inconclusive results of these studies in higher education may be that the criteria for judging academic gain varied widely. In cases where there was little improvement, the use of course examination scores was used for evaluating treatment effects and the programs were not systematically oriented to teach the content tested. Consequently, any positive influences of field experiences would almost certainly have been overridden by the much more powerful effects of learning from direct sources as lectures and readings. In those studies where the experiential program was more effective, the criteria for judging progress was either directly related to the content and activities in the field placement or asked for students to report on gains in the formation of personal theories about their intellectual development.

SUMMARY

A strong theoretical rationale for enhancing intellectual development and academic learning through experiential education can be constructed. In the context of the secondary school, experiential learning is most reasonably viewed as complementary to classroom learning, rather than a replacement for it. The

theoretical arguments described in the first section demonstrate that an experience-based model can enhance more familiar classroom approaches in several ways. First, the opportunity to do something significant with and about what is taught in the clasroom has the effect of increasing the students' motivation, as they begin to see the connection between what they learn in school and experience in the world. Secondly, experiential education involves the students in gathering original data and in reality testing both their own conclusions and those presented in the classroom or text. Thirdly, students can gain practical experience in the difficult task of learning to generalize from particular instances to general principles and to transfer this learning to new situations. Fourthly, experiential learning can engage students in critical thinking, problem solving and moral deliberation. Fifth, students can receive personally meaningful feedback from their attempts to solve problems in terms of the correctness of their assessments and the consequences of their decisions. The underlying central claim is that active participation engages the students in the application of what s/he knows, believes, and can do. This is the acid test of all learning -- that it can be applied effectively in making a positive difference in the world.

While the theoretical heft of the case for intellectual development through experiential education is substantial, empirical research to validate these claims is of a more modest scale. Very recently, (in the past two years), a series of well-constructed studies have demonstrated that experience-based programs can enhance subject matter knowledge and key intellectual skills. Moreover, there is substantial evidence that one specific form of experiential education, tutoring, can have positive effects on the academic performance of both those receiving and giving the tutoring. It should be noted that the most well documented and strongest academic benefits of experiential learning come from a form of it that is most "school like" in orientation. It may be that the types of experiential learnings that are most different from schooling -- political and social action, community service, and certain kinds of internships -- may be the most unlikely to produce positive outcomes on

typical criteria used for judging academic success -- standardized tests such as the SAT, multiple choice/examinations, etc.

The review of empirical studies of experiential education underscore two important points about the difficulty of evaluating it by conventional means. First, experience-based programs are almost never a single program, but a series of program experiences shaped by the individualistic motives of participants, site supervisors, and the nature of the setting (Moore, 1981). This aspect of experiential learning may be understood through concepts used by Getzels and Guba (1957) to define organizational systems. Experiential education represents, using this terminology, an "ideographic" system where personal behavior is derived from and tied to individual goals and dispositions. It fits crudely and may often conflict with a "nomemethic" system in which roles are interchangeable, behavior is predictable, the institution sets the goals, and the individual is expected to adjust to them.

Secondly, experiential education programs are often a "hidden curriculum" expressed largely through vague and imprecise goals. Often the orthodox, official goals of the programs cloak a potentially threatening enterprise -- allowing adolescents to make a difference in the world, for example -- with a certain legitimacy, but do not describe the real, operating purposes. These purposes, sometimes social improvement, sometimes "the humane application of knowledge," other times psychological growth as well as academic learning, are often more ambitious and less acceptable to the institution. The main point then is that the exact nature of experiential learning compared with classroom learning is that it is less predictable, less compartmentalized, perhaps more profound, and certainly more elusive to researchers. Serious research in experiential education must attempt to assess such learning outcomes, but must not expect to uncover them through conventional instruments and single-faceted methods.

BIBLIOGRAPHY

Agnew, J.C. "Better Education Through Application." Synergist, 1982, 10, (3), pp. 44-48.

Aikin, W. Story of the Eight-Year Study. New York: Harper & Brothers, 1942.

Allen, V.L., Feldman, R.S. and Devin-Sheehan, L. "Research on Children Tutoring Children: A Critical Review." Review of Educational Research, 1976, 46 (3), pp. 355-385.

Asher, J.J., JUsodo, J.A., and de la Torre, R. "Learning a Second Language Through Commands: The Recent Field Test." Modern Language Journal, 58, pp. 24-32.

Brown, A.L. and Deloache. "Skills, Plans and Self-Regulations." In Robert S. Siegler (ED.), Hillsdale, New Jersey: Lawrence Erlbaum, Assoc., 1978.

Bucknam, Ronald B. "The Impact of EBCE: An Evaluator's Viewpoint." Illinois Career Education Journal, 33, (3) Spring 1976, pp. 32-36.

Button, C. "The Development of Experiential Curriculum to Effect the Political Socializations of Anglo, Black and Mexican-American Adolescents." Unpublished doctoral dissertation, University of Texas, 1972.

Cloward, R.D. "Studies in Tutoring." Journal of Experimental Education, 1972, 41, pp. 27-31.

Cohen. P.A., Kulek, J.A., and Kulek, C.C. "Educational Outcomes of Tutoring: A Meta-Analysis of Findings." American Educational Research Journal, 1982, 19 (2), pp. 237-248.

Coleman, J.S. "Classroom vs. Experiential Learning." In M.T. Keeton (Ed.), Experiential Educaiton. San Francisco: Jossey Bass, 1976.

Coleman, J.S. "Experiential Learning and Information Assimilation: Toward an Appropriate Mix." Journal of Experiential Education, Spring 1979, 2, pp. 6-9.

Conrad, D. "The Differential Impact of Experiential Learning Programs on Secondary School Students." Unpublished doctoral dissertation, University of Minnesota, 1980.

Conrad, D.E. and Hedin, D.P. "How to Learn From Nonclassroom Experiences." Synergist, 1976, 5 (3), pp. 20-23.

Conrad, D.E. and Hedin, D.P. "Are Experiential Learning Programs Effective?" NASSP Bulletin, 1978, 62 (421) pp. 102-107.

Conrad, D. and Hedin, D. "National Assessment of Experiential Education: Summary and Implications." Journal of Experiential Education, 1982, 4 (2), pp. 6-20.

Dewey, J. "The Child and the Curriculum." In R.D. Archambault (Ed.), John Dewey on Education: Selected Writings. Chicago: The University of Chicago Press, 1964 (originally published, 1902).

Dewey, J. Democracy and Education. New York: The Free Press, 1966, (originally publisehd, 1915, MacMillan Co., New York).

Dewey, J. Experience and Education. New York: Collier Books, 1972. (originally published 1938 by Kappa Delta Pi).

Getzels, J.W. and Guba, E.G. "Social Behavior and the Administrative Process." School Review, 1957.

Gish, G.L. "The Learning Cycle." Synergist, Spring 1979, 8, (1), pp. 2-6.

Haggerty, M. "The Effects of Being a Tutor and Being a Counselor in a Group on Self-Concept and Achievement Level of Under-Achieving Adolescent Males." Dissertation Abstract International, 1971, 31 (9-A), 4460.

Hamilton, S.F. "Experiential Learning Programs." American Journal of Education, February 1980, pp. 179-215.

Hamilton, S.F. and Zeldin, R.S. "Learning By Watching: Knowledge and Attitudes of Local Government Interns." Paper presented at 1983 Conference of the American Educational Research Association, Montreal, 1983.

Harrison, C. "The Proper Study of Government." American Education, July 1977, 14.

Hedberg, J.D. "The Effects of Field Experience on Achievement in Educational Psychology." Journal of Teacher Education, 1979, 30, pp. 75-76.

Hennessey, B.C. "Political Internship: Theory, Practice and Evaluation." The Pennsylvania State University Studies, No. 27. University Park, PA: Pennsylvania State University, 1970.

Hyman, H.H., Wright, C.R. and Hopkins, T.K. Studies in Evaluation: A Case History of Research on the Encampment for Citizenship. Berkeley, CA: University of California Press, 1963.

Ingle, R.B and Zaret, E.A. "A Comparison of Classroom Observations and Tutorial Experiences in the Preparation of Secondary School Teachers." Educational Leadership Research Supplement, 1968, 2, pp. 164-168.

Jennings, W. and Nathan, J. "Some Disturbing Research on School Program Effectiveness." In A. Pearl, D. Grant & E. Wenk (Eds.), The Value of Youth. Davis, CA: Responsible Action, 1978.

Joyce, B. and Weil, M. Models of Teaching. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972.

Kelly, F.J. and Baer, D.J. "Physical Challenge As a Treatment for Delinquency." Crime and Delinquency, 1971, 17, pp. 437-445.

Kiel, D. "Service-Learning Takes a Look at Itself." In H. Cooper (Ed.), Service Learning in the South: Higher Education and Public Service, 1967-1972, Atlanta, GA: Southern Regional Education Board, 1973.

Kolb, D. and Fry, R. "Towards an Applied Theory of Experiential Learning." In Theories of Group Processes. London: John Buley and Sons, 1972.

Lewis, J. "What Is Learned In Expository Learning and Learning By Doing?" Unpublished doctoral dissertation, University of Minnesota, 1977.

Miguel, R.J. Experiential Education Policy Guideline. A report for the Experiential Education Advisory Panel. Clumbus, Ohio: National Center for Research in Vocational Education, Ohio State University, 1979.

de Montaigne, Michael. Essays. Tr. J.M. Cohen (Ed.) Baltimore, MD: Penguin Books, 1958.

Moore, D.T. "Discovering the Pedagogy of Experience." Harvard Educational Review, 1981, 51 (2), pp. 286-300.

Neckritz, B. Evaluation Report of the High School Homework Helper Program: 1971-1972. New York: Bureau of Education Research, Board of Education of the City of New York, November, 1972.

Norton, D.L. "On Teaching What Students Already Know." School Review, November, 1973, pp. 45-46.

Norton, L. Personal Destinies: A Philosophy of Ethical Individualism. Princeton, New Jersey: Princeton University Press, 1976.

Nye, Jr., R.P. "The Influence of an Outward Bound Program on the Self-Concept of the Participants." Unpublished dissertation, Temple University, 1975.

Olson, D. and Bruner, J. "Learning Through Experience and Learning Through Media." National Society For the Study of Education Yearbook (Part I) Chicago: University of Chicago Press, 1974.

Paolitto, D. "The Effects of Corss Age Tutoring On Adolescence: An Inquiry Into Theoretical Assumptions." Review of Educational Research, 1976, 44 (2) pp. 241-257.

Polanyi, M. Personal Knowledge: Towards a Post-Critical Philosophy. Chicago: Universtiy of Chicago Press, 1962.

Riecken, H.W. The Volunteer Work Camp: A Psychological Evaluation. Cambridge, MA: Addison-Wesley, 1952.

Ross, W.M., Hughes, T.M., and Hill, R.E. "Field Experiences As Meaningful Contexts for Learning About Learning." Journal of Educational Research, 1981, 75 (2), pp. 103-107.

Sherman, D. "Psychology Fieldwork: A Catalyst For Advancing Knowledge and Academic Skills." Teaching of Psychology, 1982, 9, (2), pp. 82-85.

Shulman, L.S. and Karslar, E.R. (Eds.) Learning by Discovery: A Critical Apraisal. Skokie, IL: Rand McNally, 1966.

Sprinthall, N.A. and Mosher, R.L. "A Developmental Curriculum for Secondary Schools." Paper presented at the Conference of Research for Better Schools. Kansas City, June, 1976.

Watkins, R.W. and Corder, R. Student Outcomes and Participant Opinions in Experience Based Career Education Schools. Berkeley, CA: Educational Testing Service, June, 1977.

Weiner, R. "A Critical Analysis of the Discovery Versus Expository Research Studies Investigating Retention or Transfer Within the Areas of Science, Mathematics, Vocational Educaiton, Language and Geography from 1908 to the Present." Unpublished doctoral dissertation, University of Illinois at Urbana-Champaigne, 1974.

Westmore R.C. "The Influence of Outward Bound School Experience on the Self-Concept of Adolescent Boys." Unpublished dissertation, Boston University, 1972.

Wilson, T.C. "An Alternative Community Based Secondary School Education Program and Student Political Development." Unpublished doctoral dissertation, Unviersity of Southern California, 1974.